

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference AH/FI980287	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/FI 99/00075	International filing date (day/month/year) 3 February 1999	(Earliest) Priority Date (day/month/year) 9 February 1998
Applicant VALMET CORPORATION et al		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (See Box I).
2. ☐ Unity of invention is lacking (See Box II).
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing
 - ☐ filed with the international application.
 - ☐ furnished by the applicant separately from the international application,
 - ☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
 - ☐ transcribed by this Authority.
4. With regard to the title, ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,
 - ☒ the text is approved as submitted by the applicant.
 - ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:
Figure No. 1 ☒ as suggested by the applicant. ☐ None of the figures.
☐ because the applicant failed to suggest a figure.
☐ because this figure better characterizes the invention.

1 INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 99/00075

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: D21F 11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: D21F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0651092 A1 (VALMET PAPER MACHINERY INC.), 3 May 1995 (03.05.95), column 2, line 28 - line 35; column 3, line 41 - line 48, figures 1,2 -----	1-3

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

26 May 1999

Date of mailing of the international search report

01-06-1999

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Olov Jensén

Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

03/05/99 PCT/FI 99/00075

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0651092 A1	03/05/95	SE 0651092 T3	
		AT 168424 T	15/08/98
		CA 2134492 A	30/04/95
		DE 69411668 D,T	28/01/99
		FI 92729 B,C	15/09/94
		FI 934793 D	00/00/00
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Claims

1. A method for layering of an admixture in a web former unit of a board machine in which two or more webs are formed by means of separate web former units and then combined with one another to form a multi-layer web, **characterized** in that a flow of fresh stock (11) is divided into at least two component stock flows (12_1 and 12_2) and admixtures are added to at least one component flow (12_1) that will form a face that will be placed against and combined with the face of a web formed by another web former unit in order to increase the contents of fines in the web layers and the bonding strength between the faces to be combined, said admixtures being added at a point (14_1) before a pump (22), at a point ($14a_2$) after the pump (22), and/or at a point (14_3) after a machine screen, and after this the component flows (12_1 and 12_2) are passed into a multi-layer headbox (44) and further into a gap former.
2. A method as claimed in claim 1, **characterized** in that the admixture includes starch, fines, fillers, retention agents, hydrophobifying sizes, and special chemicals.
3. A method as claimed in claim 1 or 2, **characterized** in that the fresh stock flow (11) is branched into three separate component flows ($12_1, 12_2, 12_3$), of which the admixtures are added to at least one component flow (12_1).
4. A method as claimed in any of the claims 1 to 3, **characterized** in that the layering of an admixture takes place in an upper-wire unit.
5. A method for manufacture of board in which two or more webs are formed by means of separate web former units and then combined with one another to form a multi-layer web, **characterized** in that at least one layer of stock discharged from at least one multi-layer headbox to a gap former includes an admixture and the web formed by means of said gap former is combined with at least one web which is derived from a second combination of a multi-layer headbox or a normal headbox and a gap former.

6. A multi-layer board, **characterized** in that the board comprises a layer of an admixture that has been prepared by means of at least one multi-layer headbox.

5 7. A board as claimed in claim 6, **characterized** in that the admixture includes starch, fines, fillers, retention agents, hydrophobifying sizes, and special chemicals.

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 06 October 1999 (06.10.99)	
International application No. PCT/FI99/00075	Applicant's or agent's file reference AH/FI980287
International filing date (day/month/year) 03 February 1999 (03.02.99)	Priority date (day/month/year) 09 February 1998 (09.02.98)
Applicant KINNUNEN, Juha, S. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

17 August 1999 (17.08.99)

☐ in a notice effecting later election filed with the International Bureau on:
2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer</p> <p>Jean-Marie McAdams</p> <p>Telephone No.: (41-22) 338.83.38</p>
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AH/FI980287	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI99/00075	International filing date (day/month/year) 03.02.1999	Priority date (day/month/year) 09.02.1998
International Patent Classification (IPC) or national classification and IPC ₇ D21F 11/00		
Applicant VALMET CORPORATION et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 17.08.1999	Date of completion of this report 10.05.2000
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Ulrika Nilsson/MP Telephone No. 08-782 25 00

I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

☐ the international application as originally filed.

☒ the description, pages 1-6, as originally filed,
pages _____, filed with the demand,
pages _____, filed with the letter of _____,
pages _____, filed with the letter of _____.

☒ the claims, Nos. _____, as originally filed,
Nos. _____, as amended under Article 19,
Nos. _____, filed with the demand,
Nos. 1-7, filed with the letter of 08.03.2000,
Nos. _____, filed with the letter of _____.

☒ the drawings, sheets/fig 1-5, as originally filed,
sheets/fig _____, filed with the demand
sheets/fig _____, filed with the letter of _____,
sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	<u>1-7</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-7</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-7</u>	YES
	Claims		NO

2. Citations and explanations

This statement is based on the amended claims filed with the letter of March 8, 2000.

The claimed invention relates to a method for application of a layer of admixture in a web former unit of a board machine, a method for manufacture of a board and to a multi-layer board.

The aim of the invention is to enhance the concentration of fines on the faces of the separate layers in order to promote the ply bond between the faces.

For this purpose, a flow of fresh stock is divided into at least two component stock flows and admixtures are added to at least one of the flows.

The following document is cited in the International Search Report:

D1: EP 0 651 092 A1

Cited document D1 (see especially column 2, lines 28-45; column 3, lines 41-48; figures 1, 2) discloses a stock feed system for a multi-layer headbox where a flow of fresh stock is branched into two or more branch lines. Chemicals and retention agents are added and mixed into the stock flows before and after a pump and after a machine screen, whereupon the stock flows are passed into the inlet header of a multi-layer headbox.

.../...

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V.

The cited document does not reveal the technique described in the invention, where an admixture is added into such a layer of the stock flow that will form a face that is to be combined with another web. The admixture is of a type that improves the bonding strength between the webs. Nor does D1 reveal a multi-layer board comprising an admixture layer that has been prepared by means of at least one multi-layer headbox.

It is not considered obvious to a person skilled in the art to modify the known technique in D1 so as to develop the method and the multi-layer board as claimed in the invention, involving a superior bond strength between the different layers in the web.

Therefore, the invention according to amended claims 1-7 is novel, is considered to involve an inventive step and has industrial applicability.